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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shell Oil Company
P. O. Box 2463
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EXAMINER

THEXTON, MATTHEW

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/669,763	Applicant(s) CHIU, I-CHING	
	Examiner Matthew A. Thexton	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>three sheets</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

The IDS of 2003 December 22 and 2004 May 3 have been considered.

Specification

The disclosure is objected to because of the following informalities: The application variously refers to "1-cyclohexyl-1,1,3-trimethylhydrindane" (paragraphs 10, 19, 20, claim 25 and 26), "1-phenyl-1,3,3-trimethylindane" (paragraph 75) the precursor of hydrogenation, and "1-cyclohexyl-1,3,3-trimethylhydrindane" (paragraph 76, 78. Applicant is required to clarify the names and structures of the compounds. Applicant is required to answer: (1) is hydrindane the same as indane? And (2) which formulation is correct, "1,1,3" or "1,3,3"?

The use of the trademark terms AMBERLYST, NATION, DOWEX, AMBERLITE in paragraph 24; ETHYLFLO in paragraph 37; HYDROCAL, PALE OIL, EMERY, EMKARATE, in paragraph 38, 79, and 80 and Table 3; EMKAROX in paragraph 39; LUBRIZOL, in paragraph 53 and 81 and Table 3; TYGON in paragraph 75; SANTOTRAC in Table 4 has been noted in this application. They should be capitalized wherever it appears and in the case of chemical materials be accompanied by the generic terminology. Applicant should note however, that the Examiner will allow amendment of the specification only when accompanied by a proper showing that the

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amended subject matter is what the trademarks represent, e.g., data sheets from manufacturer, with publication date prior to the earliest filing date.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

Claims Version

The listing of claims submitted in the paper filed originally has been examined.

Claims Analysis

Claim 1 is directed to mixtures (continuously variable transmission fluid)

comprising:

(a) a hydrogenated cyclic dimer of α -alkyl styrene; and

(b) a low temperature viscosity control agent;

wherein the mixture comprises less than about 20 weight % of a linear

dimer of the α -alkyl styrene, and

the mixture has a kinematic viscosity of greater than about $2.5(10)^{-6}$ m²/s

(100C) per ASTM D-445.

Claims 2-20 each depends from claim 1 and further limit or specify the kinematic viscosity; the traction coefficient, the Brookfield viscosity, the amount of

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(a), the viscosity of (b), the presence of conventional additives, the type of (b), the α -alkyl styrene is α -methyl styrene (claim 20).

Independent claim 21 is directed to methods of making dimerized α -alkyl styrene and products thereof comprising:

(a) contacting an α -alkyl styrene with supported acid catalyst to make a cyclic dimer; and

(b) hydrogenating the cyclic dimer in the presence of a hydrogenation catalyst to produce a fully hydrogenated cyclic dimer;

wherein, (a) is done in the absence of a solvent and in the absence of a free acid [interpreted in view of paragraph 10].

Claims 22-34 each depends directly or indirectly from claim 21 and further limit or specify further mixing (b) with an additive thereby forming a CVT fluid, the amount of some impurities in the CVT, the α -alkyl styrene is α -methyl styrene (claim 24), (b) is 1-cyclohexyl-1,1,3-trimethylhydriindane [sic], the acid catalyst is acidic ion exchange resin, the acid catalyst is strongly acidic ion exchange resin, the temperature at which (a) is conducted, the residence time for (a), the pressure for (a), further separating the cyclic dimer from other oligomers prior to step (b).

Claim Objections

Claim 6 is objected to because of the following informalities: The word "from" is misspelled. Appropriate correction is required.

Double Patenting

Applicant is advised that should claim 22 be found allowable, claims 26 and 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 concludes with "is contacted with the supported acid catalyst in the absence of a solvent for the α -alkyl styrene and a free acid." From paragraph 10 of the specification it is clear that "and a free acid" is the object of "in the absence of" rather than of "is contacted with" however the claim is indefinite.

Claim 25 is indefinite because the recited compound is thought to contain one or more typographical errors.

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35 USC § 102 and 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections

Claims 1-34 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Duling et al. (US 3843537).

The present claims are broadly discussed hereinabove in the section ***Claims Analysis*** which is incorporated by reference.

The reference '537 discloses fully hydrogenated cyclic dimers of α -methyl styrene among other styrenes (column 7, lines 7-19), blended with viscosity affecting components (column 19, lines 52-57), and exemplifies numerous blends (Table V). It appears that PAMVCH (column 21, lines 20-23) includes as the major component CHTMH (column 6, lines 23-24). The claimed physical properties would be inherent.

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Claims 21-34 are rejected to the extent that they encompass “and products thereof” since one would not be expected to distinguish the steps of synthesizing the dimer products, even though ‘537 does not disclose or suggest the claimed steps.

In the event the reference is deemed to be of not sufficient specificity to sustain a conclusion of anticipation, then it is concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention to have made blends which are encompassed by the present claims in view of the suggestions to do so (column 6, line 5, to column 10, line 14; column 16, line 71 to column 17, line 20). Incorporation of conventional additives is exemplified in Table V (see also the notes at end of the table) and thus at least would have been obvious to one of ordinary skill in the art at the time of the invention.

Claims 1-10, 14-17, 20-22, and 24-34 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Duling et al. (US 3597358).

The present claims are broadly discussed hereinabove in the section **Claims Analysis** which is incorporated by reference.

See Oil No. 8, 10, 13 in Table I. The low molecular weight polybutene A would act as the low temperature viscosity control agent. The claimed properties would be inherent.

Claims 21, 22, and 24-34 are rejected to the extent that they encompass “and products thereof” since one would not be expected to distinguish the steps of

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synthesizing the dimer products, even though '358 does not disclose or suggest the claimed steps.

Incorporation of conventional additives would have been obvious to one of ordinary skill in the art at the time of the invention (claim 15).

Claims 1-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hata et al. (EP 281060A2).

The present claims are broadly discussed hereinabove in the section ***Claims Analysis*** which is incorporated by reference.

The reference '060 discloses traction drive mixtures comprising a base oil such as 1,1,3-trimethyl-3-cyclohexylhydrindane (page 8, lines 1-14), plus hydrocarbon polymer having kinematic viscosity of 20 to 10,000 cSt (page 8, lines 43-57), plus antiwear agent (page 8, line 58 to page 10, line 49), plus viscosity index improvers such as polymethacrylates (page 11, lines 4-6, examples) or hydrocarbon polymers. Although 1,1,3-trimethyl-3-cyclohexylhydrindane is not exemplified, it is suggested among a small number of base oils and thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed it in the manner disclosed and exemplified. The claimed properties would be inherent.

Claims 21-34 are rejected to the extent that they encompass "and products thereof" since one would not be expected to distinguish the steps of synthesizing the dimer products, even though '060 does not disclose or suggest the claimed steps.

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koga, et al. (US 2004/0014617A1) corresponds to WO 02/097016, cited by Applicant.

Taylor et al. ("Cyclodimerization of Styrene") discloses the title reaction employing acid ion resin (AMBERLYST –15) in the presence of solvent. There is no suggestion to omit the solvent.

Sumiejski et al. (US 6103673A), cited by Applicant, discloses CVT mixtures. It discloses the desirability of the mixture having Brookfield viscosity (-40C) of less than 20 Pa-s (column 4, lines 55-64). It discloses the desirability of high temperature viscosity of about 7 to 8 cSt (100C) (paragraph bridging column 4-5). It discloses the desirability of a viscosity index improver such as synthetic ester oils (column 5, line 8, to column 7, line 62). It discloses the desirability of increased coefficient of friction, such as at least 0.120 (110C) (abstract, et al.).

Hasegawa et al. ("Oligomerization of Styrene Catalyzed by...") discloses the title reaction employing acid ion resin (NAFION-H) in the presence of solvent. There is no suggestion to omit the solvent.

Hasegawa et al. ("Cationic Oligomerization of Styrene by Solid Acids. I. Catalysis by Poly(styrenesulfonic Acid) Resin") discloses the title reaction employing acid ion resin (AMBERLYST –15) in the presence of solvent. There is no suggestion to omit the solvent.

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Seki et al. (US 4758364) discloses synthetic polymeric low temperature viscosity control agents for CVT fluids which obtain viscosity (-40) of below about 35 cSt.

Harmer et al. (US 5948946A) discloses dimerization of α -methyl styrene using a solid catalyst and a solvent (cumene) (column 27, line 49 to column 28, line 3). There is no suggestion to omit the solvent.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 571-272-1125. The examiner can normally be reached on Tuesday-Friday, 9:30 to 7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S. Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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